

# Andreas Poehlmann

PHYSICIST · NEUROSCIENTIST · SOFTWARE ENGINEER

Place of Birth: Bayreuth, Germany Current Residence: Vienna, Austria

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*“Infinite diversity in infinite combinations.”*

## Education

### University of Vienna

DOCTORATE IN MOLECULAR BIOLOGY

- Thesis: “The role of asymmetric motion responses in *Drosophila* object tracking”

Vienna, Austria

Apr. 2012 - Aug. 2017

### University of Bayreuth

DIPLOM IN PHYSICS

- Thesis: “Radiographic measurement of the Rayleigh-Taylor instability in rotating magnetic fields”

Bayreuth, Germany

May 2005 - Nov. 2011

## Skills

**Programming** Python, C/C++, JavaScript

**Software/Technology** Flask, SQLAlchemy, Numpy, Scipy, OpenCV, Tensorflow, ZMQ, Anaconda

**Experiment Design** Realtime virtual reality control systems, Embedded system design

**System Administration** Linux, Ansible, Postgres, Jenkins, Docker

**Languages** German, English

## Work Experience

### loopbio gmbh

SOFTWARE ENGINEER

- Software developer for cloud based analysis tools for behavioral biologists (app.loopbio.io)
- Design and development of universal metadata management system and browser based video annotation tools
- Development and construction of a tethered flight virtual reality system for fruit flies
- Development and construction of a walking sphere virtual reality system for locusts
- System administration and deployment of computer and server infrastructure for loopbio costumers

Vienna, Austria

Aug. 2017 - PRESENT

## Research Experience

### University of Freiburg

SCIENTIFIC ASSISTANT

- Recreated various published visual experiments in simulated environments for model predictions
- Redesigned and optimized tethered flight virtual reality setup including wing beat amplitude tracker

Freiburg, Germany

Feb. 2016 - Jul. 2017

### Research Institute of Molecular Pathology

RESEARCH ASSISTANT AND PHD STUDENT

- Developed analytical and numerical asymmetric motion dependent visual system models
- Contributed to software and hardware design for FlyMAD
- Designed web-based fly stock management system
- Built setup for precision temperature measurements in *Drosophila*
- Researched the possible application of high-throughput neuronal activity recording systems using bioluminescence

Vienna, Austria

Feb. 2012 - Feb. 2016

### Fraunhofer task force for ceramic composite materials

SCIENTIFIC ASSISTANT

- Developed image-processing tools for X-ray computed tomography and automated production error analysis

Bayreuth, Germany

Jul. 2011 - Jan. 2012

### University of Bayreuth

SCIENTIFIC ASSISTANT AND DIPLOMA STUDENT

- Modeled bifurcation behavior of the Rayleigh-Taylor instability of magnetic fluids in rotating magnetic fields
- Designed and built setup for X-ray radiographic measurements in rotating magnetic fields
- Developed novel optical method for surface tension measurements of fluids with reflective liquid-air boundaries
- Designed and built USB controlled programmer for Microchip PIC embedded devices

Bayreuth, Germany

May 2005 - Jul. 2011

# Volunteering

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## CASIS Center for the Advancement of Science in Space

remotely

TECHNICAL SUPERVISOR; MOD66 STUDENT EXPERIMENT LAUNCHED TO INTERNATIONAL SPACE STATION ON SPACEX CRS-14

Jan. 2018 - Apr. 2018

- Technical supervision of student team for fluorescence spectroscopy experiment measuring beta-amyloid decay in microgravity
- Development of software running on embedded Linux arm pc for continuous experiment control and measurement recording

## Python-Seabreeze software module for Ocean Optics spectrometers

remotely

AUTHOR AND MAINTAINER; AVAILABLE AT PYTHON-SEABREEZE.READTHEDOCS.ORG

Sep. 2012 - PRESENT

- Development of pure python usb communication library for controlling Ocean Optics spectrometers
- Development of C++/Cython wrapper for integration of proprietary Ocean Optics spectrometer library
- Deployment of module for Windows/MacOS/Linux across x86/x64/arm architectures

# Awards

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## NASA Space Apps Challenge Vienna

Vienna, Austria

TEAM LEAD

Oct. 2019

- 1st Price and People's Choice Award for MajorTom satellite data visualization prototype

# Publications

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## A unifying model to predict multiple object orienting behaviors in tethered flies

bioRxiv

ANDREAS POEHLMANN, SAYAN J. SOSELISA, LISA M. FENK, ANDREW D. STRAW

Jul. 2018

bioRxiv doi: 10.1101/379651

## Asymmetric Processing of Visual Motion for Simultaneous Object and Background Responses

Current Biology

LISA M. FENK, ANDREAS POEHLMANN, ANDREW D. STRAW

Nov. 2014

Current Biology, 24(24), 2913-2919. doi: 10.1016/j.cub.2014.10.042

## FLYMAD: Rapid thermogenetic control of neuronal activity in freely walking Drosophila

Nature Methods

DANIEL E. BATH, JOHN STOWERS, DOROTHEA HÖRMANN, ANDREAS POEHLMANN, BARRY J. DICKSON, ANDREW D. STRAW

May. 2014

Nature methods, 11(7), 756-762. doi: 10.1038/nmeth.2973

## Unravelling the Rayleigh–Taylor instability by stabilization

Journal of Fluid Mechanics

ANDREAS POEHLMANN, REINHARD RICHTER, INGO REHBERG

Oct. 2013

Journal of Fluid Mechanics, 732, R3. doi: 10.1017/jfm.2013.424

# Conferences

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## Freiburg Neural Circuits Symposium

Freiburg, Germany

PRESENTATION

Jun. 2015

Models of fly visual behavior

## 11th Göttingen Meeting of the German Neuroscience Society

Goettingen, Germany

POSTER: ANDREAS POEHLMANN, LISA M. FENK, ANDREW D. STRAW

Mar. 2015

How much *Drosophila* visual behavior is predicted by models with asymmetric motion responses?

## DPG Frühjahrstagung & Euromech Colloquium 526

Dresden, Germany

PRESENTATION

Mar. 2011

Measuring the onset of the Rayleigh-Taylor instability in rotating magnetic fields

# Teaching Experience

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## CAJAL Behavior of Neural Systems Course

Lisbon, Portugal

TEACHING ASSISTANT; CHAMPALIMAUD CENTRE FOR THE UNKNOWN

Jul. 2015 & Aug. 2016

- Designed and supervised course on freely walking virtual reality for fruit flies
- Designed and supervised course on tethered flight and visual stimulation

## Computer measuring technology Course

Bayreuth, Germany

TEACHING ASSISTANT; EXPERIMENTAL PHYSICS V, UNIVERSITY OF BAYREUTH

Nov. 2008 - Apr. 2011

- Independently organized and managed the course, and supervised the students
- Redesigned the microcontroller assembly kit and designed an USB programmer which can be built by students